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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,347	08/26/2003	Jian J. Chen	2328-050A	3505

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LOWE HAUPTMAN GILMAN & BERNER, LLP
Suite 300
1700 Diagonal Road
Alexandria, VA 22314

EXAMINER
ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,347	CHEN ET AL.	
	Examiner	Art Unit	
	Luz L. Alejandro	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0606*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al., U.S. Patent 5,795,429 in view of Yoshida et al., U.S. Patent 5,690,781 and Savas, U.S. Patent 5,983,828.

Ishii et al. shows the invention substantially as claimed including a method of manufacturing an inductive plasma processor, each processor including a plasma excitation coil 24 having plural parallel electrically connected windings (24a, 24b), each of the windings having a pair of excitation terminals, the windings of each coil being

adapted to be driven by an excitation source arrangement so that different currents simultaneously flow through the pair of excitation terminals of each winding, the plural windings of each coil being arranged so that an exterior winding of the coil is about an interior winding of the coil, the exterior winding and the interior winding being about an axis of the coil, the method comprising positioning the exterior winding relative to the remainder of the coil so the plasma density incident on the workpiece has a predetermined desired relationship (see fig. 9 and its description).

Ishii et al. does not expressly disclose the positioning step including turning the exterior winding and another winding of the coil relative to each other about the axis; the exterior winding being turned relative to the another winding to assist in controlling azimuthal electric field distribution and azimuthal plasma density distribution of the processor; and the method being performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor. Yoshida et al. discloses moving a coil to assist in controlling the electric field distribution and plasma density distribution of the processor (see figs. 6A-6B and their descriptions). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Ishii et al. so as to include the claimed positioning step in order to achieve a uniform plasma distribution.

Concerning wherein the method is performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor, Savas discloses an apparatus with different processors 102a, 102b that operate independently (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Ishii et al. modified by Toshiba et al. so as to use this process on a plurality of different processors because in such a way each processor can have its plasma distribution adjusted based upon the particular process being conducted in the processor.

Claims 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al., U.S. Patent 5,795,429 in view of Ni et al., WO 00/58993 and Savas, U.S. Patent 5,983,828.

Ishii et al. shows the invention substantially as claimed including a method of manufacturing an inductive plasma processor, each processor including a plasma excitation coil 24 having plural parallel electrically connected windings (24a, 24b), each of the windings having a pair of excitation terminals, the windings of each coil being adapted to be driven by an excitation source arrangement so that different currents simultaneously flow through the pair of excitation terminals of each winding, the plural

windings of each coil being arranged so that an exterior winding of the coil is about an interior winding of the coil, the exterior winding and the interior winding being about an axis of the coil, the method comprising positioning the exterior winding relative to the remainder of the coil so the plasma density incident on the workpiece has a predetermined desired relationship (see fig. 9 and its description).

Ishii et al. does not expressly disclose the positioning step including turning the exterior winding and another winding of the coil relative to each other about the axis; the exterior winding being turned relative to the another winding to assist in controlling azimuthal electric field distribution and azimuthal plasma density distribution of the processor; and the method being performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor. Ni et al. discloses moving different positions or changing the relative angular position of a coil to assist in controlling the electric field distribution and plasma density distribution of the processor (see figs. 1-2 and their description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Ishii et al. so as to include the claimed positioning step in order to achieve a more controlled plasma distribution.

Concerning wherein the method is performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density

distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor, Savas discloses an apparatus with different processors 102a, 102b that operate independently (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Ishii et al. modified by Ni et al. so as to use this process on a plurality of different processors because in such a way each processor can have its plasma distribution adjusted based upon the particular process being conducted in the processor.

Claims 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al., U.S. Patent 6,164,241 in view of Yoshida et al., U.S. Patent 5,690,781 and Savas, U.S. Patent 5,983,828.

Chen et al. shows the invention substantially as claimed including a method of manufacturing an inductive plasma processor, each processor including a plasma excitation coil having plural parallel electrically connected windings, each of the windings having a pair of excitation terminals, the windings of each coil being adapted to be driven by an excitation source arrangement so that different currents simultaneously flow through the pair of excitation terminals of each winding, the plural windings of each coil being arranged so that an exterior winding of the coil is about an interior winding of the coil, the exterior winding and the interior winding being about an axis of the coil, the method comprising positioning the exterior winding relative to the

remainder of the coil so the plasma density incident on the workpiece has a predetermined desired relationship (see fig. 6 and its description).

Chen et al. does not expressly disclose the positioning step including turning the exterior winding and another winding of the coil relative to each other about the axis; the exterior winding being turned relative to the another winding to assist in controlling azimuthal electric field distribution and azimuthal plasma density distribution of the processor; and the method being performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor. Yoshida et al. discloses moving a coil to assist in controlling the electric field distribution and plasma density distribution of the processor (see figs. 6A-6B and their descriptions). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Chen et al. so as to include the claimed positioning step in order to achieve a uniform plasma distribution.

Concerning wherein the method is performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor, Savas discloses an apparatus with different processors 102a, 102b that operate independently

(see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Chen et al. modified by Toshiba et al. so as to use this process on a plurality of different processors because in such a way each processor can have its plasma distribution adjusted based upon the particular process being conducted in the processor.

Claims 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al., U.S. Patent 6,164,241 in view of Ni et al., WO 00/58993 and Savas, U.S. Patent 5,983,828.

Chen et al. shows the invention substantially as claimed including a method of manufacturing an inductive plasma processor, each processor including a plasma excitation coil having plural parallel electrically connected windings, each of the windings having a pair of excitation terminals, the windings of each coil being adapted to be driven by an excitation source arrangement so that different currents simultaneously flow through the pair of excitation terminals of each winding, the plural windings of each coil being arranged so that an exterior winding of the coil is about an interior winding of the coil, the exterior winding and the interior winding being about an axis of the coil, the method comprising positioning the exterior winding relative to the remainder of the coil so the plasma density incident on the workpiece has a predetermined desired relationship (see fig. 6 and its description).

Chen et al. does not expressly disclose the positioning step including turning the exterior winding and another winding of the coil relative to each other about the axis; the exterior winding being turned relative to the another winding to assist in controlling azimuthal electric field distribution and azimuthal plasma density distribution of the processor; and the method being performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor. Ni et al. discloses moving different positions of a coil to assist in controlling the electric field distribution and plasma density distribution of the processor (see figs. 1-2 and their description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Chen et al. so as to include the claimed positioning step in order to achieve a more controlled plasma distribution.

Concerning wherein the method is performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor, Savas discloses an apparatus with different processors 102a, 102b that operate independently (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process

of Chen et al. modified by Ni et al. so as to use this process on a plurality of different processors because in such a way each processor can have its plasma distribution adjusted based upon the particular process being conducted in the processor.

Claims 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., U.S. Patent 6,288,493 in view of Yoshida et al., U.S. Patent 5,690,781 and Savas, U.S. Patent 5,983,828.

Lee et al. shows the invention substantially as claimed including a method of manufacturing an inductive plasma processor, each processor including a plasma excitation coil 310 having plural parallel electrically connected windings (310a, 310b, 310c, 310d), each of the windings having a pair of excitation terminals, the windings of each coil being adapted to be driven by an excitation source arrangement so that different currents simultaneously flow through the pair of excitation terminals of each winding, the plural windings of each coil being arranged so that an exterior winding 310c of the coil is about an interior winding of the coil, the exterior winding and the interior winding being about an axis of the coil, the method comprising positioning the exterior winding relative to the remainder of the coil so the plasma density incident on the workpiece has a predetermined desired relationship (see fig. 3B and its description).

Lee et al. does not expressly disclose the positioning step including turning the exterior winding and another winding of the coil relative to each other about the axis; the exterior winding being turned relative to the another winding to assist in controlling azimuthal electric field distribution and azimuthal plasma density distribution of the

processor; and the method being performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor. Yoshida et al. discloses moving a coil to assist in controlling the electric field distribution and plasma density distribution of the processor (see figs. 6A-6B and their descriptions). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Lee et al. so as to include the claimed positioning step in order to achieve a uniform plasma distribution.

Concerning wherein the method is performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor, Savas discloses an apparatus with different processors 102a, 102b that operate independently (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Lee et al. modified by Toshiba et al. so as to use this process on a plurality of different processors because in such a way each processor can have its plasma distribution adjusted based upon the particular process being conducted in the processor.

Claims 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., U.S. Patent 6,288,493 in view of Ni et al., WO 00/58993 and Savas, U.S. Patent 5,983,828.

Lee et al. shows the invention substantially as claimed including a method of manufacturing an inductive plasma processor, each processor including a plasma excitation coil 310 having plural parallel electrically connected windings (310a, 310b, 310c, 310d), each of the windings having a pair of excitation terminals, the windings of each coil being adapted to be driven by an excitation source arrangement so that different currents simultaneously flow through the pair of excitation terminals of each winding, the plural windings of each coil being arranged so that an exterior winding 310c of the coil is about an interior winding of the coil, the exterior winding and the interior winding being about an axis of the coil, the method comprising positioning the exterior winding relative to the remainder of the coil so the plasma density incident on the workpiece has a predetermined desired relationship (see fig. 3B and its description).

Lee et al. does not expressly disclose the positioning step including turning the exterior winding and another winding of the coil relative to each other about the axis; the exterior winding being turned relative to the another winding to assist in controlling azimuthal electric field distribution and azimuthal plasma density distribution of the processor; and the method being performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned

relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor. Ni et al. discloses moving different positions of a coil to assist in controlling the electric field distribution and plasma density distribution of the processor (see figs. 1-2 and their description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Lee et al. so as to include the claimed positioning step in order to achieve a more controlled plasma distribution.

Concerning wherein the method is performed on a plurality of different processors of the same type having differing azimuthal electric field and plasma density distributions from processor to processor and the exterior winding of each particular processor is turned relative to the remainder of the coil of the particular processor until tests indicate optimum uniform plasma distribution is achieved in each processor, Savas discloses an apparatus with different processors 102a, 102b that operate independently (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Lee et al. modified by Ni et al. so as to use this process on a plurality of different processors because in such a way each processor can have its plasma distribution adjusted based upon the particular process being conducted in the processor.

Response to Arguments

Applicant's arguments with respect to claims 32-41 have been considered and are persuasive with respect to rejections using the Holland et al. reference as the

primary reference. Concerning the rejections using Ishii et al., Lee et al. and Chen et al. as primary references, these rejections had not being argued and therefore the use of these references is proper. With respect to applicant's contention that the Ni et al. reference, U.S. Patent 6,229,264 reference is not valid due to common ownership, note that newly cited reference, Ni et al., WO 00/58993 is now applied which qualifies under 35 USC 102(a) and therefore 35 USC 103(c) no longer applies.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-

1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Luz L. Alejandro
Primary Examiner
Art Unit 1763

August 30, 2006